

Full steam ahead

Groundbreaking when it was invented to speed up the boiling of bones, the not-so-sexy pressure cooker is back with a bang, says food historian Neil Buttery



AFTER a couple of decades in the wilderness, pressure cookers are back, featuring on television programmes such as *MasterChef* and *Great British Menu*. And why not? They certainly get the job done, significantly reducing both cooking time and energy usage by about four-fifths. In the new millennium, they were ditched and forgotten, collecting dust in the loft. Nay-sayers complained that the pressure cooker was too good at its job, making the food within too soft and extracting too much from animal bones, giving the resulting stock a glue-like quality. However, when the first pressure cooker was invented by Frenchman Denis Papin, way back in the 1670s—only 13 years after the Great Fire of London—all of these supposed drawbacks were considered very desirable.

Pressure cookers work by reducing 'cooking times by trapping the steam that escapes from boiling water, thereby raising its boiling point—and maximum temperature—to about 250°F/120°C', wrote Harold McGee in his seminal classic *On Food and Cooking* (1984). For this to happen, the pressure inside the cooker must reach two atmospheres, in other words, twice that of normal atmospheric pressure. Because water remains liquid at this high pressure, the food is still bathed in simmering water, keeping its contents tender. Papin's prototype worked at an impressive eight atmospheres of pressure, meaning that water wouldn't boil until it reached a staggering 180°C, instead of the usual 100°C, at standard air pressure. He worked on his idea at the Royal Society of London for several years with physicist Robert Boyle. It was well designed, requiring only 5oz–8oz of fuel to reach that phenomenal pressure. What a hot, hissing and terrifying beast it must have been.

Papin called it the 'Digester of Bones' and showed off his creation to members of the



‘What a hot, hissing and terrifying beast Denis Papin’s digester must have been’

Royal Society (who at that time included Sir Isaac Newton, Samuel Pepys and Sir Christopher Wren) at a special dinner on April 12, 1682. The event was captured in attendee John Evelyn's diary: 'I went this afternoon with several of the Royal Society to a supper which was all dressed, both fish and flesh, in Monsieur Papin's digesters, by which the hardest bones of beef itself, and mutton,

were made as soft as cheese... producing an incredible quantity of gravy.'

Papin had laid out the digester's unique properties the year before in *A New Digester or Engine for Softening Bones*. The book contains lots of technical diagrams and descriptions of its uses, but, for Papin, the digester's ability to soften tough meat was its primary feature: 'The oldest and hardest Cow-Beef may be made as tender and as savoury as young and choice meat.' With only a half a pound of fuel, a poor family could cook cheap and tough meat quickly and economically. He extended this to the cooking of hard and leathery salt pork and beef on ships and found that the digester was excellent at extracting gelatine from meat to make stiff, clear jellies—a process usually involving hours of simmering down pots of calves' feet, an expensive and tiresome process. Papin served up jelly at the dinner and it went down very well, with Evelyn writing that the 'jelly made of the bones of beef, the best for clearness and good relish [were] the most delicious that I had ever seen, or tasted'. The invention would be, as they say today, a game changer.

However, despite its potential, the digester never took off commercially, being far too expensive to make in number and, therefore, unable to reach the kitchens of poor families or ships' cooks. These limitations were only overcome in the 1930s—250 years later—although the cookers were still expensive and prone to exploding. The pressure cooker's potential in the kitchen was without doubt, so the safety features were constantly being improved, modified and enhanced, but it wasn't until we reached the 1970s, with its stricter safety legislation and improved industrial capabilities, that the pressure cooker would become affordable to most households. Ironically, it was ditched by middle classes in the more decadent 1990s and 2000s because of its association with kitchen economy and perceived poverty.

In the 2020s, there is less stigma attached to frugality and home economy, so the pressure cooker's usefulness has been reassessed. It enjoyed a resurgence in the wake of the energy crisis, which made the long, slow simmering of tough meat cuts, the cooking of dried beans and the steaming of suet puddings economically unviable at home. With a pressure cooker, all this is still possible. Retailers such as John Lewis are reporting sales increases of more than 100%, the stigma is lifted and, for the humble pressure cooker, it looks as if it's full steam ahead. 🍷

Getting steamy

Denis Papin's digester didn't take off in his own lifetime, but its invention led to the discovery of steam power. When experimenting with his invention, he fitted a piston to it, creating, for the first time, steam-powered movement. This use of his creation would change the course of history and go on to power Britain's expanding Empire in the following centuries, industrialising the Western world

and its colonies, and revolutionising every aspect of life, from warfare to travel, from agriculture to the textiles industry.

Englishman Thomas Newcomen built the first practical steam engine just before Papin died, in obscurity and poverty, in 1713. The Frenchman would never know the far-reaching effects of his invention, yet he predicted in his book that 'when the thing is made common, a great many more Uses of it will be found in a short time'. He certainly wasn't wrong there.